

What is claimed:

1           1.       Electromechanical valve actuator for internal combustion engines, equipped  
2 with a polarized electromagnet (700) and with a mobile magnetic plate (706) switching  
3 between a first position close to the electromagnet (700) and a second position remote  
4 from the electromagnet (700), the switching times between these positions being  
5 determined depending on the operating state of the engine, characterized in that it  
6 comprises said means (704, 708) for supplying the electromagnet (700) with a variable  
7 attracting current in the course of the approach of the plate (706) to the electromagnet  
8 (700).

1           2.       Actuator in accordance with claim 1, characterized in that it comprises  
2 means for reducing the attracting current as the plate (706) is approaching.

1           3.       Actuator in accordance with claim 1 or 2, characterized in that it comprises  
2 means for inverting the direction of the current ( $i_b$ ,  $i_h$ ) supplying the electromagnet (700)  
3 when the plate (706) switches to the second position.

1           4.       Actuator in accordance with claim 3, characterized in that it comprises  
2 means for controlling a current ( $i_b$ ,  $i_h$ ) generating a magnetic field of an intensity lower  
3 than or equal to the intensity of the magnetic field generated by a magnet (704) of the  
4 electromagnet when the current is inverted.

1           5.       Actuator in accordance with one of the above claims, characterized in that  
2 the plate (706) moves into the vicinity of a second electromagnet in its second position  
3 and it comprises means for simultaneously controlling the current supplies for each  
4 electromagnet.

1           6.       Actuator in accordance with one of the above claims, characterized in that it  
2 comprises a electromagnet (700) equipped with an E-shaped support, a magnet (704)  
3 being located at the end of one of the branches of the support opposite in relation to the  
4 plate (706).

1           7.       Actuator in accordance with one of the above claims, characterized in that

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2 the variations in the current are related to an amplitude and/or to a duration of supply.

1 8. Actuator in accordance with one of the above claims, characterized in that it  
2 comprises means for considering the speed of the engine to be a parameter of the  
3 operating state of the engine.

1 9. Internal combustion engine equipped with an actuator comprising a  
2 polarized electromagnet and a magnetic plate switching between a first position close to  
3 the electromagnet and a second position, characterized in that the actuator is according to  
4 one of the claims 1 through 9.